EXCLUSIVE SURVEY: The Desktop Wins Big In 1992 Budgets *page 64*

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DATAMATION

FOR CORPORATE COMPUTING PROFESSIONALS WORLDWIDE

NOVEMBER 15, 1991

Jim Treybig, president and CEO, Tandem Computers Inc., with the NonStop Cyclone/R

Tandem Races To RISC

page 28

Downsize With Multiuser PCs *page 37*

Why PC Managers Still Want Services *page 40*

Sitewide Nets, The Smart Way *page 47*

Making NetView Work With UNIX *page 55*

Easy Ways To Manage Multiple IS Projects *page 61*

Leasing Smart *page 73*

Market Review

Turnkey Imaging Systems

page 81

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COVER STORY

OLTP

Tandem Races To RISC 28

BY JEFF MOAD

Tandem's fast new product line may help it win the price/performance race it's waging against an aggressive pack of competitors.

Cover photography by Chris Springmann

Tandem's Treybig jockeys for position in the price/performance fast lane.

SPECIAL REPORT

MINI/MICRO SURVEY

The Desktop Wins Big In 1992 Budgets 64

BY BOB FRANCIS AND PAUL PINELLA

After being hit hard by recession, IS managers are poised to satisfy a huge pent-up demand for small systems and software. The big winners in 1992 budgets are PCs, networks and client/server tools.

PRODUCT GUIDE

FEATURE

Sun's Rising Server 77

BY ELIZABETH LINDHOLM

Sun Microsystems's SPARCserver 600MP series comprises fast, modular and upgradable multiprocessing systems. But is the best yet to come?

Sun's Bard hopes a new line of servers will provide a "sparc" for the company.

FEATURES

PCs & WORKSTATIONS

MULTIUSER SYSTEMS

Downsize With Multiuser PCs 37

BY BOB FRANCIS PCs attached to LANs don't have a lock on the downsizing trend. Dependable multiuser PC systems can also be used for downsizing, thanks to new hardware, operating systems and enterprise connectivity.

PURCHASING

Why PC Managers Still Want Services 40

BY BOB FRANCIS Conventional wisdom suggests that what PC managers want most during a recession is low price. But they also crave service and support.

NETWORKS

SMART HUBS

Sitewide Nets, The Smart Way 47

BY SUSAN KERR Trying to forge a single logical sitewide network from 10 years' worth of different LAN media and protocols? Smart hubs may be your ticket to immediate connectivity and migration to tomorrow's standards.

NETWORKS

MANAGEMENT

Making NetView Work With UNIX 55

BY SUSAN KERR The AIX Service Point opens the door to mix-and-match integration of NetView with element managers for non-IBM hardware that runs under UNIX.

SOFTWARE

PROJECT MANAGEMENT

Easy Ways To Manage Multiple IS Projects 61

BY MIKE RICCIUTI How many application development projects can an IS manager control at any one time? Ten? One Hundred? How about thousands? New super-project management tools blow away the limits.

SYSTEMS

LEASING

Leasing Smart 73

BY NED SNELL Slow growth and a few well-publicized problems in the leasing industry have worried users. Here's a guide to help you navigate the complex leasing process.

Tim Duncan recommends keeping an expert eye on "hell or high water" clauses in most leases, page 73

PRODUCT GUIDE

▶ **Product Feature**

Sun's Rising Server **77**

▶ **Market Review**

An Image Of Document Management **81**

A Selected List Of Turnkey Imaging Systems Suppliers **82**

▶ **User Product Review 84**

Software
C And SQL And Fortran And . . .

Peripherals
A Low-Cost Brother

PCs & Workstations
Modular PCs

Networks
X.25 Management

Systems
Experts On A VAX

▶ **New Product Review 87**

DEPARTMENTS

Inside DATAMATION 8
Letters And Access 13
Look Ahead 19
Media Report 25
Career Opportunities 94
Market Insights 101
Ad Index 103
Future Vision 104

Why PC Managers Still Want Services

Conventional wisdom suggests that what PC managers want most during a recession is low price. But they also crave service and support.

BY BOB FRANCIS

Is price everything in PCs these days? A quick glance at the daily headlines might suggest so. When Businessland Inc. recently succumbed to acquisition, many observers jumped to the conclusion that service and support—the hallmarks of this once-dominant PC retailer throughout much of the 1980s—were no longer as important as price. Recent heavy discounting via direct market channels, coupled with the arrival of mass merchandising in the form of PC superstores, only serves to reinforce this perception.

The only trouble is, it may be wrong. Despite signs that price is becoming more important to PC managers, most are still demanding service, support and the delivery of mission-critical applications on the PC platform—in short, many of the items that Businessland strived to deliver. So what went wrong? "I believe that Businessland overhead was simply too high to offer service as well as merchandise and still come out ahead," maintains William Y. Tauscher, chairman of rival ComputerLand Corp.

JWP Inc., the large systems integrator that purchased Businessland last summer and formed the new Canton, Mass.-based concern, JWP Businessland, is returning Businessland to its roots. Large customers like New York Life Insurance Co. are being reassured that service and support are still important. "They [JWP] are still providing the service and support we need, so we see no reason to change," says Donna O'Driscoll, assistant vice president in charge of field automation at the New York City-based insurer.

Meanwhile, the $150 million PC-outsourcing contract that Businessland signed with Rochester, N.Y.-based Eastman Kodak Co. is still in effect. And, although no other contracts as extensive as Businessland/Kodak have surfaced, officials at both ComputerLand and MicroAge Computer Centers Inc. say they have inked similar, although smaller, agreements.

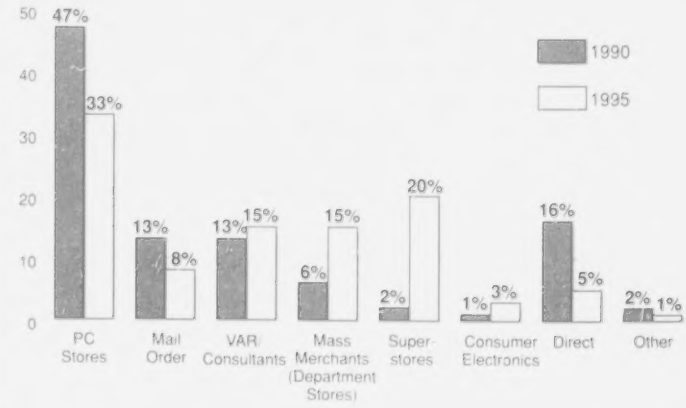
Indeed, many other retail computer stores with national operations are hoping to prove that Businessland's original formula still works. Examples include CompuCom Systems Inc. of Dallas; ComputerLand of Pleasanton, Calif.; Inacomp Computer Centers Inc. of Troy, Mich.; and MicroAge of Tempe, Ariz.

There is additional evidence that large companies still want the handholding that certain computer retailers can supply. Service and support remain key to PC purchases at Steelcase Inc., the business furniture giant of Grand Rapids, Mich. Although Steelcase has cut back on PC purchases due to the recession, the company continues to buy most of its PCs from MicroAge. This is not to say that Steelcase isn't interested in getting a good deal. "The superstores are not in our area yet, so it is possible that we will look at them," says Aivars P. Apsite, microcomputer coordinator. But, he adds, "MicroAge has a superstore concept with their warehouse, so it doesn't look like we will need to change our policies." MicroAge's warehouse policy allows customers to purchase PCs with few added options at competitive prices.

Other users say they are continuing to use the same purchasing policies as in the past. "We're still buying Big Blue," says Jacqueline Bynsdorp, PC coordinator for Jockey International Inc. in Kenosha, Wis. Bynsdorp admits that the skivvies seller could have gotten better prices if

Where Corporate Buyers Shop

A recent survey of 1,200 PC buyers indicates where corporate buyers most like to shop today—and predicts where they may turn tomorrow.



Source: Dataquest

it had shopped around. But, she maintains: "We may have missed out on some deals, but in the long run it's probably been a blessing because we haven't had any connectivity problems in our networks."

Superstores To The Forefront

There will, of course, always be a class of buyers interested in price. And, although big corporate customers may be slow to change traditional buying habits, the entrance of computer superstores is nevertheless shaking up the market, as these large, warehouse-like retail establishments get set to take some business away from the traditional PC retailers. Douglas Kass, a senior analyst at San Jose, Calif.-based Dataquest Inc., believes most traffic will be generated by small businesses and professionals. Still, he's convinced that superstores will pull in some corporate customers. "If they're offering a better price than the traditional supplier, they're going to get some of the business, particularly in a recession," he says.

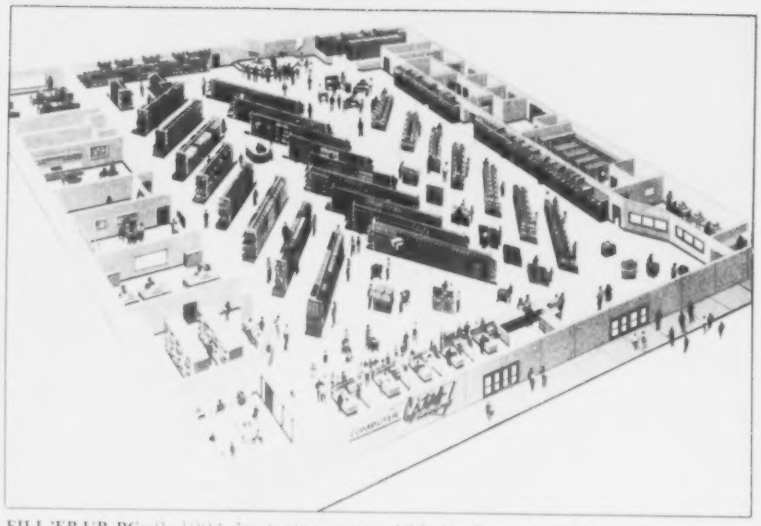
The leader so far is CompuSA Inc. of Dallas, which has 17 superstores nationwide and sells PCs manufactured by Dell Computer Corp., as well as other suppliers. (Dell officials say they charge the same price to those who buy directly over the phone from Dell as they do to those who go to a retail outlet like CompuSA.) CompuSA takes a consumer approach to the business by offering plenty of inventory, wide aisles and low prices. Besides covering standard warranty work and configuring new systems on the spot, very little additional service is offered by CompuSA or other superstores.

The traditional retailers are hardly standing still as discounters open their doors. ComputerLand has opened its own superstore in Atlanta; MicroAge now offers its customers a warehouse-type purchasing arrangement; and Computer SuperCenters International Inc., a subsidiary of Tandy Corp. in Fort Worth, is planning to open a nationwide chain of Computer City SuperCenters before the end of the year. Tandy's initial superstores will be located in Austin and Houston, Texas; Buffalo, N.Y.; Detroit; Garden Grove, Calif.; Minneapolis; and Seattle. "We have a real sense of urgency to make this happen," says Tandy chief executive officer John Roach.

Vendors used to using other channels are also making moves to court the corporate market. Despite being known as a mail-order house, for example, Dell has support personnel in 25 U.S. cities to handle key corporate accounts. The company has also begun selling in nontraditional outlets such as Staples, a large office supply chain. And Dell has strengthened its value-added reseller channel, as well. As a result, Dell reports that its sales to corporate customers doubled in the second quarter over the previous year's figures. Even some large computer companies, notably Digital Equipment Corp., are taking another look at the corporate market and are now selling their PC products directly through the mail.

Meanwhile, the value-added retailer channel is also changing, as some of the regional VARs attempt to go national by offering systems integration services to larger corporate accounts. For instance, CompuServe Inc. of Columbus, Ohio, recently purchased two local area network systems integration companies: Dallas-based MicroSolutions Inc. and SEARA Information Strategy Corp. of McLean, Va. Both of those companies will now offer their services nationwide as part of CompuServe Systems Integration Group. Company officials say this service is necessary as their customers implement client/server applications.

For PC purchasers, though, one wild card that could dampen enthusiasm for services is the lingering recession. "The economy has affected our PC purchases more than any changes in the channel," admits Steelcase's Apsite. Nevertheless, service and support are likely to remain key concerns for IS managers seeking the same level of support they now enjoy with mainframes. Says Jockey's Bynsdorp: "If we're going to be putting mission-critical systems on this platform, we're going to need equipment and service that meets those needs."



FILL 'ER UP, PCs: By 1994, Tandy plans to have 100 of its Computer City superstores in operation.

Sitewide Nets, The Smart Way

Trying to forge a single logical sitewide network from 10 years' worth of different LAN media and protocols? Smart hubs may be your ticket to immediate connectivity and migration to tomorrow's standards.

BY SUSAN KERR

Many network managers today face a difficult problem: How do you build and manage a facilitywide network out of what can be a mess of independent networks, all using different protocols and media?

"We're trying to divide and conquer," says Mark Wheeler, a network manager for Hughes Aircraft Co. in El Segundo, Calif. He handles five buildings, two remote subsidiaries, 2,300 nodes and is trying to consolidate the network down to the TCP/IP, DECnet, OSI, AppleTalk Phase II and Novell IPX protocols. This Hughes location is wired with fiber, twisted pair and coaxial cable. The fact that all of this is considered "consolidation," underscores the complexity of Wheeler's job.

Part of Wheeler's solution is to use a smart hub, a piece of hardware increasingly adorning wiring closets in large companies. Hubs, also known as concentrators, have been around for years. Smart hubs are an outgrowth of the commonly used 10Base-T hubs that concentrate Ethernet over unshielded twisted pair networks. Hubs, smart or dumb, enable the construction of a buildingwide structured-wiring system—typically vertical backbones with horizontal subnets. But smart hubs are increasingly becoming more powerful.

The first improvement intelligence brought to hubs is the ability to manage networked workstations. Administrators can remotely turn on or off a network port from a management workstation, rather than having to run to a wiring closet every time they suspect they might be having a problem with a particular end node. They can also segment a network to isolate heavy traffic. Increasingly, smart hubs are being used to provide a fairly sophisticated level of network management, including standards-based element management and an interface to umbrella managers such as IBM's NetView or Hewlett-Packard Co.'s OpenView. Troubleshooting and maintenance have also been simplified with "hot-swapping" features, which allow replacement of faulty cards in the concentrator without disrupting the network.

And now smart hubs have acquired the flexibility to serve as means of integrating, at least on the lowest levels, various types of networks. High-end models can bring together over 100 workstations in a single chassis, combining various media flavors of Ethernet, Token Ring and fiber connections all in one unit. At first glance, that may seem like a way of perpetuating the chaos of the past but, for managers like Wendell Klingensmith, it's a way to move rationally toward a more planned vision.

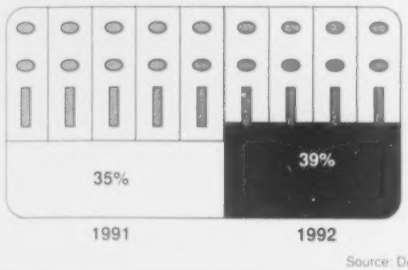
As information network services director for Case Western Reserve University, Klingensmith is working toward the day that each student will have a workstation that can run data, voice and video simultaneously through multiple live windows. Recognizing that all the needed technologies are not here today, Klingensmith and others at the Cleveland-based university are putting in place the infrastructure that will allow them to upgrade gradually. One of the pieces helping them do this is smart hubs.

"Everyone is in transition," Klingensmith says. "Nobody is at the same point at the same time. We might have one user over here who needs gigabits and another who is okay with a 10-megabit Ethernet. So do you overkill and give everyone Sonet [gigabit-bandwidth optical networking] today? No. You need a smart hub so you can do it over time."

The transition to high-bandwidth networking was recently addressed by 3Com Corp., which has introduced its own line of smart hubs after remarketing others' for several years. The LinkBuilder 3GH not only provides bridging between Ethernet and Fiber Distributed Data Interface (FDDI) networks, but opens up the possibility of creating what 3Com terms "personal LANs," as well. In an organization with a small number of users who need high bandwidth, IS managers can simply give them a direct, full 10-megabit-per-second Ethernet connection to the backbone, isolating them from other

Structured Wiring Gaining Ground

Smart hubs are key components of structured-wiring systems, which are gaining ground as LANs grow and become internetworked. The 1991 DATAMATION/Cowen & Co. survey shows that 35% of 3,600 DATAMATION readers are implementing structured wiring this year and another 4% plan to next year.



Source: DATAMATION/Cowen & Co.

LAN traffic. The conversion to FDDI can be delayed until prices go down.

Although Case Western is not taking the personal LAN approach, it is rewiring most buildings so that fiber-optic cable runs to desktops. But the IS group found that it had to keep some older buildings (which will eventually be torn down) wired with both thin and thick Ethernet. Today, the group primarily runs Ethernet with some FDDI as well, and hopes eventually to move to a Sonet-based backbone network. Each of the university's 50 buildings houses at least one smart hub from Cabletron Systems Inc.

> Everyone Is In Transition. Nobody Is At The Same Point At The Same Time.

"Networks have gotten much more sophisticated," says David Fowler, vice president of marketing for Chipcom Corp., another maker of smart hubs. "It used to be that a network existed around a server or a computer, but over a period of time a company may have grown literally dozens or even hundreds of networks. Customers want to interconnect them, and it may be that users who need to be logically together [on the same network] are not physically together."

To do that, users will pay between $75 and $300 per port for the smart hubs. On the low end, that's not much different from a standard 10Base-T hub. For those with simple needs and small budgets, an increasing number of small (eight to 12 port), base smart hubs are available in the $1,000 range. On the high end, users are paying a $100 to $200 per port premium for flexibility and manageability. Configuring hubs with 72 FDDI ports can cost as $1,000 to $2,000 per port. The total cost of more complex hubs can run into the tens of thousands of dollars for a large unit with over 100 ports and advanced features such as fiber connections and bridge or router modules.

Cautious Users

As vendors pack more and more functions into these smart hubs, users are reacting with caution, concerned about doing too much with a single box.

"I haven't seen that it's practical or easy to handle multiple wires or types of cable in one box," says Keith Segerson, director of communications and network services for George Mason University, a unit of the Virginia state university system located in Fairfax. "You have to pick a direction. As soon as you start combining twisted pair, coax, etc., you get back into all the problems we're trying to get away from." Segerson is faced with the challenge of trying to eliminate broadband Ethernet, with its attendant complexities and fine-tuning requirements. Smart hubs don't necessarily have to be so. George Mason is rewiring with a fiber backbone and unshielded twisted pair to the desktop. That, feels Mason, will be the least expensive route.

> I Haven't Seen That It's Practical To Handle Multiple Wires In One Box.

Although happily using Chipcom hubs to connect multiple Ethernet networks, Hughes's Wheeler is wary of using hubs in some of their more advanced and newer uses. Mixing media within a concentrator works fine, he says, but mixing protocols is something different.

"Each protocol has a different numbering scheme, which means you have to be aware of where you're plugging people in," says Wheeler. "If you're going to have multiple devices speaking to each other, you'd better be prepared for some real coordination, such as knowing what segment supports what protocol."

Which Route To Go

Users like Wheeler also face a series of decisions about whether they want to take advantage of the increasing routing and bridging capabilities of smart hubs. More and more hub vendors are placing routers into their products, and some, including Cabletron, Chipcom and SynOptics Communications Inc., are actually buying their router technology from Cisco Systems Inc. of Menlo Park, Calif. Wheeler's experience in installing Cisco routers made him opt against installing routers inside hubs except at one small remote site.

"We're looking to keep routers outside the hubs," Wheeler says. "We want to have Cisco do the direct support. Keeping up with the software and firmware ROM updates is a challenge in itself, without throwing in another manufacturer."

Additionally, Wheeler brings up the is-

Smart Hub Vendors

The following is a selected list of smart hub vendors. Most offer hubs with multiple media and protocol support.

AT&T/NCR
Dayton, Ohio
Circle No. 350

BICC Communications Inc.
Westborough, Mass.
Circle No. 351

Cabletron Systems Inc.
Rochester, N.H.
Circle No. 352

Chipcom Corp.
Southborough, Mass.
Circle No. 353

Codenoll Technology Corp.
Yonkers, N.Y.
Circle No. 354

David Systems Inc.
Sunnyvale, Calif.
Circle No. 355

Digital Equipment Corp.
Maynard, Mass.
Circle No. 356

Fibermux Corp.
Chatsworth, Calif.
Circle No. 357

Gandalf Data Inc.
Wheeling, Ill.
Circle No. 358

Hewlett-Packard Co.
Roseville, Calif.
Circle No. 359

Lannet Data Communications Ltd.
Huntington Beach, Calif.
Circle No. 360

Lantana Technology Inc.
San Diego
Circle No. 361

Multi-Tech Systems Inc.
Mounds View, Minn.
Circle No. 362

Optical Data Systems Inc.
Richardson, Texas
Circle No. 363

Plexcom Inc.
Simi Valley, Calif.
Circle No. 364

Proteon Inc.
Westborough, Mass.
Circle No. 365

Racal-Datacom Inc.
Sunrise, Fla.
Circle No. 366

Synernetics Inc.
North Billerica, Mass.
Circle No. 367

Synoptics Communications Inc.
Santa Clara
Circle No. 368

3Com Corp.
Santa Clara
Circle No. 369

Zenith Electronics Corp.
Glenview, Ill.
Circle No. 370

Source: DATAMATION

sue of cost. He says that a subsidiary at Hughes just paid approximately $6,000 for a Synoptics router board for its hub. He says the list price for a stand-alone Cisco router could be as low as $4,995.

Vendors, particularly those that integrate other manufacturers' devices into their boxes, concede that often it is no cheaper to buy bridges and routers built into the smart hub. A spokesperson for Santa Monica, Calif.-based Retix, which supplies remote bridges to a number of hub vendors, points out that customers are paying an additional margin on the integrated product. On the plus side, William Bailey, Access One line manager for Ungermann-Bass Inc., says:

☐ MIXING MEDIA WITHIN A CONCENTRATOR WORKS FINE, BUT MIXING PROTOCOLS IS DIFFERENT.

"You gain economies of scale: less training, fewer vendors to deal with, and you solve a lot of plumbing problems by having everything in one box."

Although the trend is to include more routing and bridging functions in hubs, for certain applications, this arrangement may not be ideal. Large sites with a great variety of networks, such as at Hughes, may be better suited to separate boxes, says Curt Wheeling, marketing vice president for David Systems Inc. David Systems chose not to use other vendors' bridges and routers but instead developed its own technology for its smart hub line.

"Our approach is there's a big market for complex routing at the high end, and that's where vendors like Cisco will shine," explains Wheeling. "But there's also a huge market for customers who need simple routing—for example, they use Novell networks and need to route them. We'll do the simple routing, but not every single protocol out there."

Nonetheless, the technology planners behind smart hubs defend adding more and more features into a single rack. "A user should expect to double capacity in two years and triple in three years and must look at what technology he's going to need," believes Chipcom's Fowler. By being modular and flexible, smart hubs allow changes in rewiring and expansion under a single management umbrella, he adds. And, as the technology matures, customers will become more comfortable with the idea of a single box. ▭

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Adobe Systems Incorporated
Advanced Logic Research, Inc.
Aldus Corporation
Amdahl Corporation
Apple Computer, Inc.
ASK Computer Systems, Inc.
AST Research, Inc.
Borland International, Inc.
Cabletron Systems, Inc.
cisco Systems, Inc.
Cognos Incorporated
COMPAQ Computer Corporation
CompuCom Systems, Inc.
Computer Associates International, Inc.
CONVEX Computer Corporation
Cooperative Solutions, Inc.
Corporate Software, Inc.
Cray Research, Inc.
Data General Corporation
Dell Computer Corporation
Digital Equipment Corporation
Electronic Data Systems
Everex Systems, Inc.
Gupta Technologies, Inc.
IBM Corporation
InaCom Corporation
Informix Corporation
Intel Corporation
Intuit, Inc.
KnowledgeWare, Inc.
LEGENT Corporation
Lotus Development Corporation
MicroAge, Inc.
Microsoft Corporation
MIPS Computer Systems, Inc.
NCR Corporation
Network General Corporation
Network Systems Corporation
Novell, Inc.
Oracle Corporation
Parametric Technology Corporation
Progress Software Corporation
Pyramid Technology Corporation
QMS, Inc.
Reply Corporation
The Santa Cruz Operation, Inc.
Sequent Computer Systems, Inc.
Silicon Graphics, Inc.
Slate Corporation
Storage Technology Corporation
Stratus Computer, Inc.
Sun Microsystems, Inc.
Symantec Corporation
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The Desktop Wins Big In 1992 Budgets

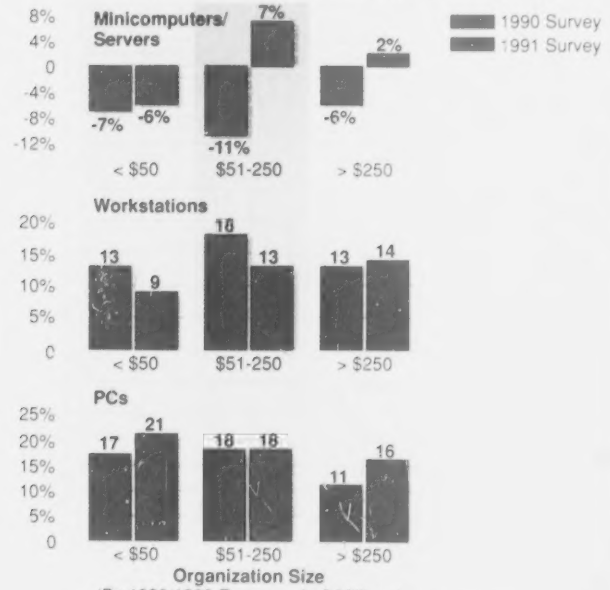
After being hit hard by recession, IS managers are poised to satisfy a huge pent-up demand for small systems and software. The big winners in 1992 budgets are PCs, networks and client/server tools.

BY BOB FRANCIS AND PAUL PINELLA

1992 Budgets Up Across The Board

Users are increasingly upbeat as they prepare their 1992 budgets, particularly for PCs and server-based systems.

NET % DIFFERENCE BETWEEN SITES INDICATING "HIGHER" AND THOSE INDICATING "LOWER" SPENDING IN 1992/1993 THAN IN 1991/1992



Organization Size
(By 1990/1989 Revenue, In $ Millions)

Source: DATAMATION/Cowen & Co.

Is the recession over?

The answer is a cautious "yes" if you look at the spending plans of IS managers over the next 12 months. According to the fall DATAMATION/Cowen & Co. survey of IS managers' plans to purchase mini and microcomputers, which was mailed to 65,000 DATAMATION subscribers last summer, IS managers appear ready to ratchet up their 1992 spending for PCs, workstations, minicomputers and software. Increasingly attractive prices at the desktop and networking levels, combined with the perennial backlog of applications, are spurring this growing user demand. And that's quite a turnabout from only six months before, when a similar readership poll taken last winter indicated budgets were being clipped in the face of the Gulf War and recession.

For minicomputer vendors, the spigot has opened only slightly. But even that trickle will be welcome. Most mini suppliers have been battered by a gang of PC networks, workstations and open systems vendors intent on stealing their business.

Previous surveys disclosed a conspicuous drop in proprietary minicomputer market share, with the exception being IBM's AS/400. But now demand seems to be stabilizing. Each of the Big Three—IBM, Hewlett-Packard Co. and Digital Equipment Corp.—has reason for optimism. Each has taken steps to link its architecture with other operating systems and with networks, blurring the line between open and proprietary.

Longer term, however, IS managers indicate that over half of their applications are headed toward the desktop, not minicomputers or mainframes. Suppliers staking their fortunes on interoperable tools and

relational databases for client/server systems will be rewarded as companies of all sizes struggle to integrate desktop systems into enterprise networks. As IS managers finish up their 1992 budgets, the survey indicates the following buying trends:

- Despite a couple of years of lean growth and the recession, pent-up demand for desktop systems and software remains strong.
- Favorable pricing has emerged as the most important attribute in a PC supplier, but not at the expense of service and support.
- Microsoft Windows 3.0 and Windows applications are taking the desktop by storm. OS/2 use is increasing only in large companies still true to IBM's micro-to-mainframe vision.
- Client/server computing is here and lifting the fortunes of network supplier Novell Inc., database kingpin Oracle Corp. and a whole panoply of smaller firms building bridges, routers, smart hubs and other networking glue.
- The applications backlog is growing larger, brightening the prospects of packaged software suppliers and vendors of computer-aided software engineering (CASE) tools.

Likewise, budgets on the mainframe side are showing good promise for 1992 after poor trends were plainly indicated in 1991. According to a late summer follow-up survey of IBM mainframe sites polled during last spring's DATAMATION, Cowen & Co. report, a significant one-third of all IS managers planned to defer or cancel major hardware purchases for the remainder of this year. However, almost two-thirds of the respondents who deferred or canceled such purchases plan to restore deferred projects by the end of 1992. And, on balance, preliminary big-system spending budgets for 1992 look positive, particularly among 3090-class mainframe users. Cowen analyst Steve Weber believes spending is finally bottoming out for Big Iron. "But a genuine recovery will not be visible for a while longer," he cautions.

Priced-Right Personal Computers

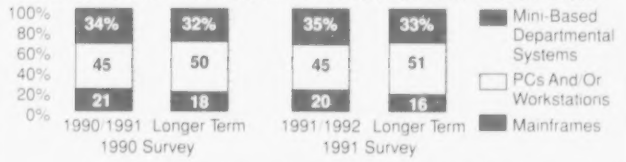
Price is the most important factor in selecting a PC hardware retailer these days, 43% of respondents indicate. As a result, traditional PC leaders such as IBM and Compaq Computer Corp. are being squeezed by lower priced products from the likes of Advanced Logic Research Inc. (ALR), AST Research Inc. and Dell Computer Corp. Dell, in particular, has moved into the catbird seat, offering users a mix of well-priced products while sending a clear message that buying direct doesn't have to mean inferior service. Clearly, the message is getting through—service/support ranks as the second most important factor to PC purchasers.

Laptop shipments will continue to grow as a percentage of total PC purchases. Over the past year, laptops accounted for 12% of all survey respondents' unit purchases; IS managers expect that to increase to 15% in the 12 months following the survey. But even in this high-growth, high-tech area, price is king. Market leaders Compaq, IBM, Toshiba Corp. and Zenith Data Systems Inc. may all suffer next

The Surge In Desktop Systems

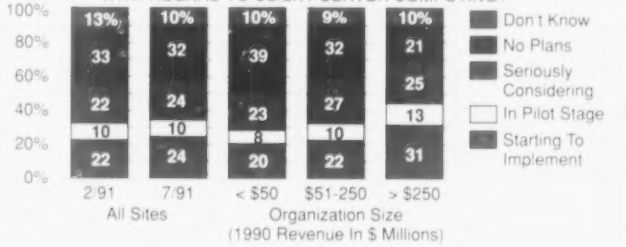
With most new applications destined for PCs and workstations...

ON WHAT PLATFORM DO YOU EXPECT TO DEVELOP NEW APPLICATIONS?



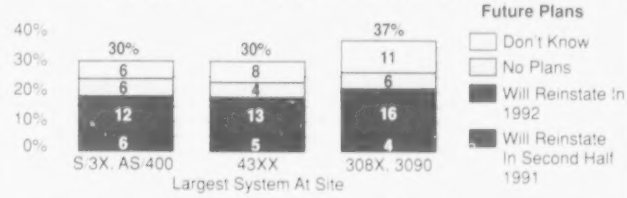
...Nearly 45% of largest respondent sites are already in the early stages of client/server implementation.

WHERE DOES YOUR ORGANIZATION STAND WITH REGARD TO CLIENT/SERVER COMPUTING?



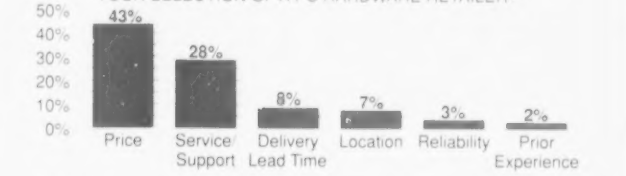
Fully one-third of respondents have canceled or deferred major hardware purchases this year, but an encouragingly large percentage of those deferring plan to reinstate their projects by the end of 1992.

% OF SITES THAT CANCELED MAJOR HARDWARE PROCUREMENT PLANS AND THEIR FUTURE PLANS FOR 1991/1992



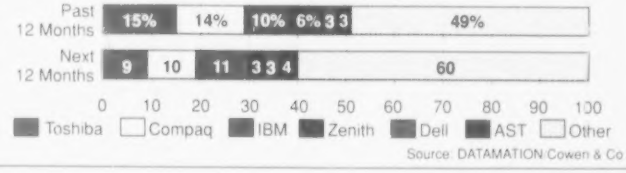
Price, followed by service and support, is the most important user criterion in the selection of a PC hardware retailer.

WHAT ARE THE ONE OR TWO MOST IMPORTANT CRITERIA IN YOUR SELECTION OF A PC HARDWARE RETAILER?



The traditional market leaders in laptops will continue to lose share to smaller, cheaper suppliers.

WHO WAS, AND WILL BE, YOUR PRIMARY SUPPLIER OF LAPTOP/NOTEBOOK PCS?



Source: DATAMATION/Cowen & Co

Suppliers staking their fortunes on interoperable tools and relational databases will be rewarded

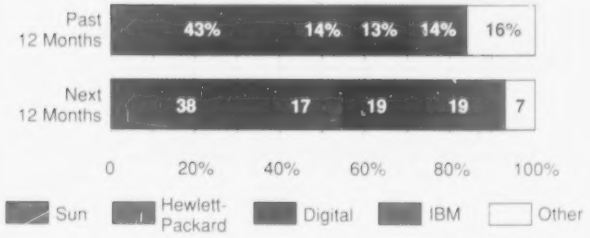
year as users turn to the amorphous "other" category for 60% of their laptop purchases. Price may also be responsible for a waning interest in Compaq's SystemPRO, a high-end server that was greeted enthusiastically last year but since has been hurt by the onslaught of clones and cheap Intel boxes.

Apple Computer Inc. has also shown itself willing to cut prices and introduce a boatload of new Macintosh models, including last month's announcement of the PowerBook notebook family. And although the company doesn't gain much market share by those moves, it does get a more favorable rating from its users. This year, that's more than Compaq and IBM can say, both of which received less favorable ratings from their customers in comparison to several major competitors.

Workstations Are Hot: Proprietary Minis Dominated By The Big Three

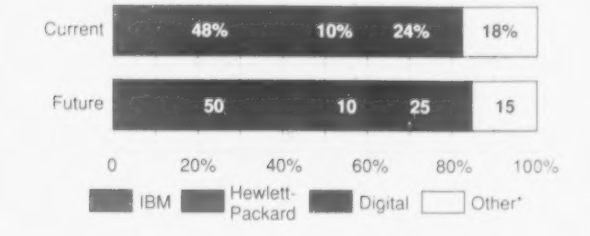
Users will spend more money for workstations with Digital, Hewlett-Packard and IBM over the next 12 months following the survey, at the expense of Sun.

% OF INDICATED SPENDING (BY DOLLARS)



In the proprietary midrange arena, the commercial market has narrowed to three major players.

WHICH MANUFACTURER DO YOU CONSIDER YOUR PRIMARY SUPPLIER?



*Includes: Data General (2.3% current, 2.2% future), Unisys (2.3%, 2.2%), Wang (2.9%, 1.8%), Prime (1.5%, 1.1%), Tandem (0.5%, 0.5%) and Stratus (0.3%, 0.2%).

Note: These distributions relate specifically to the survey sample and should not be construed as representing the actual share distribution of industry shipments.

Source: DATAMATION/Cowen & Co.

In recent surveys, Sun Microsystems Inc. has been chewing up pieces of the workstation pie from older established vendors. This year, however, Sun's share of workstation dollars declined, dropping from 43 to 38%. Users may be hedging their bets until the workstation leader wheels out its much-anticipated SPARCstation 3 models and begins shipping its 600MP multiprocessor servers, which were announced last month. Meanwhile, Digital, HP and IBM all show gains.

Rocky VI

IBM might do well optioning its RS/6000 story to Sylvester Stallone. Two years ago, Big Blue was a dark horse in the workstation sweepstakes with its 98-pound weakling, the RT PC. No more. Now one year since volume shipments began, the RS/6000 is projected to constitute one-fifth of IBM's minicomputer, server and workstation sales. Significantly, the RS/6000's success isn't limited to IBM customers. Nearly half of sites purchasing this reduced instruction set computing (RISC) machine are traditionally non-IBM users; a hefty 17% of RS/6000 customers cite Digital as their principal technical systems supplier.

Hewlett-Packard may have a similar tale to tell this time next year about its new line of workstations. The company's new 9000 series multiuser systems and 700 series RISC workstations are projected to make up 51% of HP shipments to survey respondents by well into 1992, primarily at the expense of the company's 3000 series minicomputers. HP has also been successful in displacing other vendors in the commercial UNIX market, gaining share from Unisys Corp., Wang Laboratories Inc. and other, smaller suppliers. Although, it's too early to call the new RISC boxes a success, currently HP is finding it difficult to meet demand for the product.

> Dell has moved into the catbird seat, offering users a mix of well-priced products.

As demand for workstations heats up, what's left of the once-crowded proprietary midrange market appears to be carved up between three major suppliers—once again IBM, Digital and HP. Fewer than 10% of respondents name Data General Corp., Prime Computer Inc., Unisys or Wang as their major mini supplier. The competition has shifted to the commercial UNIX arena, where a variety of vendors ply their trade. But, even here, the Big Three hold down the top spots.

Continuing to lift IBM's midrange spirits is the AS/400, launched in June 1988. Despite its proprietary architecture, the AS/400 appears to be gaining ground among survey respondents at the expense of NCR Corp. and Wang, especially when it comes to users from larger companies. Ironically, small organizations, one of the original targets of the AS/400, are resisting the machine, as are many System/

36 users. Only 20% of System 36 sites surveyed attempted an AS/400 upgrade during the year.

As noted in last year's survey, network computing has arrived. Fully 70% of the users say they have a network in use, well up from the 51% of respondents who said they were networked last year. Moreover, nearly 90% expect to have a network by mid-1992. Even more impressive are the near universal links between PCs established in many organizations. Forty-four percent of users expect that 80 to 100% of their PCs will be networked by the end of 1992.

THe Need For Networks

Enthusiasm for local-area networks runs strong in companies of all sizes, an especially good omen for market leader Novell. Once a questionable contender outside the realm of departmental networks, Novell's NetWare offering now is clearly the front-runner even in organization-wide networks, where it's poised to grab 53% of survey respondents' business in the coming year. Novell's multifaceted strategy for branching out beyond the department and its recent marketing ties with IBM have so far proved effective against some heavy competition, including Microsoft Corp.

> The connection between open systems and UNIX may have been broken.

Despite a strong—and expensive—marketing push on the part of Microsoft, its LAN Manager 2.0 network operating system has barely cracked the double-digit mark in this latest survey. And next year hardly looks brighter, as responses indicate the Redmond, Wash., software giant will gain a subdued 2% of respondents' business, at the expense of smaller players, while NetWare grabs an additional 6%. It's too soon to count Microsoft out, especially with a new version of LAN Manager based on Microsoft's futuristic New Technology operating system on the distant horizon. But, for the moment, Novell has the momentum.

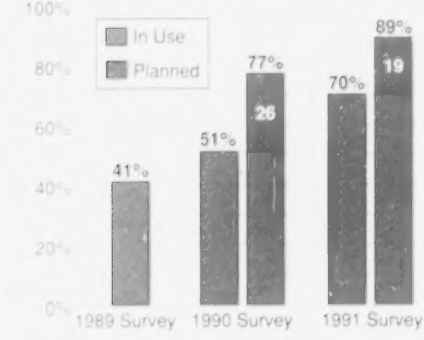
What's Hot In Desktop Software

As more companies implement new applications in client/server configurations, UNIX continues as the operating system of choice for respondents' future minicomputer and workstation systems. Yet, somewhat surprisingly, the growth rate of UNIX has slowed. From 1989 to 1990, interest in UNIX jumped nine percentage points to 36%. This year, that interest climbs just 2% among users, to

Networks Move Into The Mainstream

Recession or not, users are continuing to network PCs. By mid-1992, close to 90% of all surveyed firms intend to be networked.

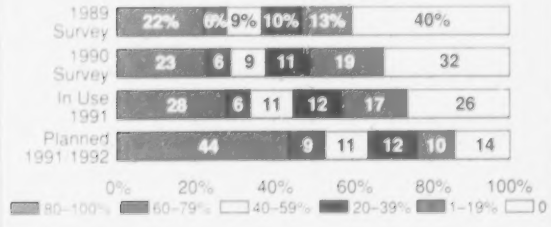
% OF SITES WITH NETWORKS INSTALLED OR PLANNING TO INSTALL A NETWORK



Network acceptance continues to accelerate amid the ever-shrinking pool of nonnetworked sites.

WHAT PERCENTAGE OF YOUR PCs ARE IN NETWORKS (VS. STAND-ALONE)?

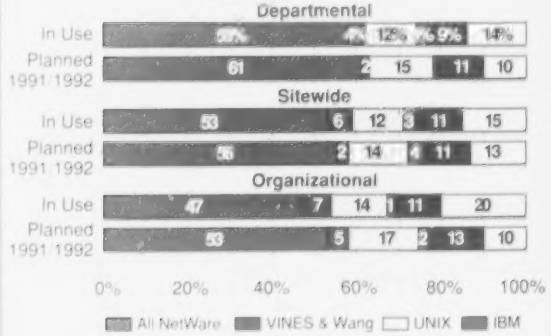
Percentage Of PCs In Networks



Novell's NetWare dominance continues unchallenged in all sizes of networks.

WHICH, IF ANY, NETWORK OPERATING SOFTWARE IS ALREADY INSTALLED AND WHICH IS PLANNED OVER THE NEXT 12 MONTHS?

Scope Of Network



Source: DATAMATION Cowen & Co.

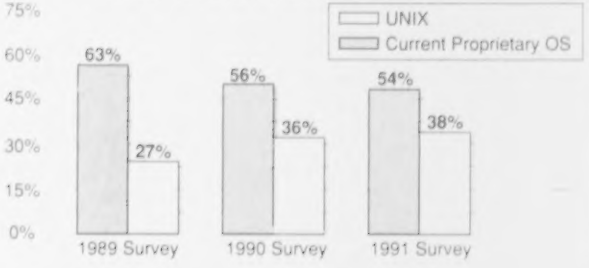
It's clear that Microsoft Windows has captured the hearts of high-end PC users.

38%. Cowen's Weber speculates that the connection between open systems and UNIX may have been broken. "In the past, users did not separate the two. Now I think they see open systems in a broader sense," he says, suggesting that the stigma once held by proprietary systems as isolated platforms may no longer be valid.

UNIX Slows Down, DBMS And Windows Strong In '92

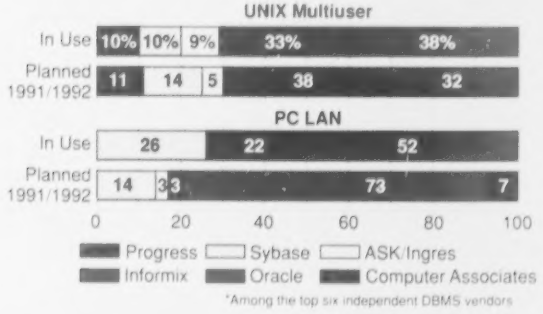
While interest in UNIX appears to be cooling...

WHICH OPERATING SYSTEM ARE YOU MOST LIKELY TO USE IN 1992 AND BEYOND FOR IMPLEMENTING NEW MINI/WORKSTATION-BASED APPLICATIONS?



...Competition remains heated for the remaining growth segments in the DBMS market.

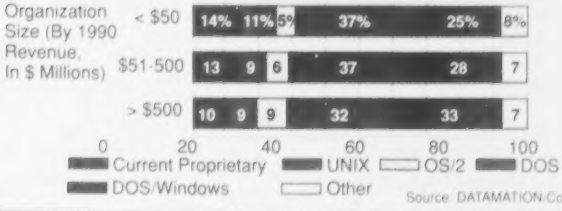
WHO WILL BE YOUR SUPPLIER OF DBMS SOFTWARE?*



*Among the top six independent DBMS vendors

DOS and Windows loom as platforms of choice for future productivity applications, leaving OS/2 vying with UNIX in organizations with revenue greater than $500 million

WHICH OPERATING SYSTEM IS YOUR ORGANIZATION MOST LIKELY TO USE IN IMPLEMENTING NEW OFFICE/PRODUCTIVITY APPLICATIONS IN 1992 AND BEYOND?



Source: DATAMATION/Cowen & Co.

No matter what the underlying operating system, the growing application development backlog is driving an increase in purchases of packaged software, according to respondents to the IBM Mainframe follow-up survey. Those users facing the longest backlogs—more than 24 months—anticipate the largest average annual budget increase for packaged software, nearly 9% per year over the next three to five years. Such backlogs presage a favorable market for CASE software, as well. In the Mini/Micro survey, Oracle looks to be a big gainer in CASE next year, capturing 26% of respondents' business versus the 12% now. KnowledgeWare Inc. loses ground, dropping to 29% from its current 40% perch.

Heated competition is also the order of the day in the database management system arena. Although growth has petered out in the proprietary minicomputer sector, multiuser UNIX and PC LAN users appear willing to make up the difference over the next 18 months. Survey results predict that vendors of DBMS software for proprietary operating systems will see a dramatic drop in demand as this transition occurs. Oracle's products and ASK Computer Systems Inc.'s Ingres products in this line will likely be hardest hit. But Oracle should reap big benefits with its PC LAN products, as will Informix Software Inc. and Sybase Inc. in the UNIX market. Oracle's gains come at a time when the installation of a client/server relational DBMS is cited by 24% of IS managers as being in the cards over the next 12 months.

In PC operating systems, it's clear that Microsoft Windows has captured the hearts of high-end PC users. No matter the organization size, DOS and Windows are viewed as safe bets for both productivity applications and future in-house development. For the first time, respondents predict that regular DOS—that is, DOS without Windows—will soon constitute less than 50% of their installed base of PC operating systems. IBM's OS/2 will find a better reception among users with a network or mainframe orientation, the survey indicates. Any other operating system, such as Sun's recent entrant, Solaris, will have to contend with the strong grip DOS and Windows have on the installed base.

Survey Methods

The 16th annual DATAMATION/Cowen & Co. Mini/Micro Survey is based on 3,578 reader survey questionnaires returned following a mass mailing last summer to 65,000 DATAMATION subscribers. The survey is administered by Cowen & Co.-Institutional Services, a financial securities firm whose Boston and New York-based research team specializes in high-technology and health-care related companies. Although the survey does not constitute a scientific representative sampling of the U.S. user community, the results do highlight general directions toward which IS managers are moving their organizations in the year ahead.

An Image Of Document Management

Buried under three trillion paper documents, U.S. businesses can no longer afford to continue practicing archaic methods of document management.

BY JANET MANN
Faulkner Information Services

Today's businesses must deal with mountains of paper—letters, reports, vital records, sales literature, forms. In fact, approximately 95% of the more than three trillion documents currently stored in offices throughout the United States exist in paper form, and another billion or so pages are added to the pile each day. If the problem seems insurmountable, take heart; help is on the way. Imaging systems have made their way into the business market, promising to level the mountain of paper.

Imaging offers a wealth of benefits to organizations, including information management, increased productivity and efficient use of physical storage space. Perhaps most important, imaging helps businesses access information, eliminating extensive, exhaustive searches for documents and files that often disappear in traditional storage facilities.

Imaging is a broad umbrella term that incorporates a variety of systems and software products. A complete imaging system typically includes the following components:

- Workstations with high-resolution displays
- Scanners and optical character recognition (OCR) software for digitizing hard-copy information
- Software designed to manage document retrieval, work flow automation and communications functions
- Output devices
- Storage media—most notably the optical discs.

Optical Storage Technology

Optical storage is largely responsible for imaging's success. Optical media significantly reduces the amount of physical space required for archival storage and thereby reduces operating costs. Information that fills 20 file cabinets can be stored on a single 5¼-inch disc.

A 5¼-inch optical disc stores 600 megabytes of information. That's the equivalent of about 200,000 pages, or more than 1,500 conventional 5¼-inch diskettes. Twelve-inch optical discs, which store as much as 6 gigabytes of information (about 800,000 pages), are becoming readily available, as are 14-inch disks, each of which can store about 7GB of information. The optical disc used by most imaging systems is the write once, read many (WORM) disc.

Optical jukeboxes, which operate much like musical jukeboxes (via robotics), are available for businesses with extremely high-volume storage requirements. These units contain multiple optical discs and permit users to access any or all interchangeably. Today's optical jukeboxes can store more than one terabyte of information.

Imaging can be subdivided into three major functional areas. The first group of functions includes the ability to scan, store and display documents on line as digitized images, providing essentially an electronic replacement for the traditional file cabinet with one major difference—the electronic file cabinet supports concurrent access by multiple users.

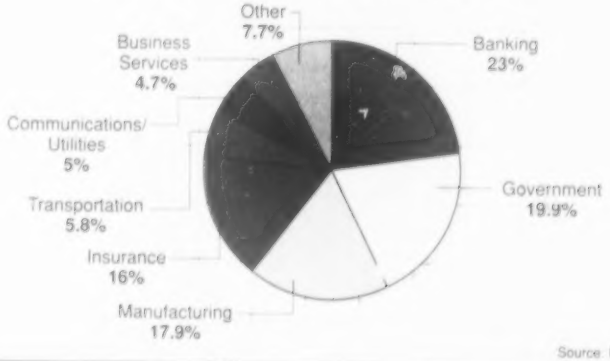
Getting Work To Flow

The second group of functions includes the electronic routing of information throughout an enterprise from one workstation to another, along with the automation of such processes as approval cycles, schedule issues, productivity measurement and report generation. This function is called work flow automation, a term originally coined by FileNet Corp.

A number of recently introduced, sec-

Who Uses Image Processing?

The insurance industry accounts for the greatest number of imaging systems in use, while banks claim the second largest share.



Source: IDC/Avante

ond-generation systems add a third function: they integrate with existing applications. These products can collect all the information required for a specific purpose and deliver it to a specific user. Although the need to integrate imaging with existing applications was not deemed critical for most organizations during the last decade, research by BIS Strategic Decisions of Norwell, Mass., indicates that more than 80% of today's users are eager to add this function.

Imaging debuted in the late 1970s in custom products from systems integrators. It wasn't until 1984 that FileNet pioneered the concept of the turnkey imaging system—a large-scale, proprietary optical disc system that incorporates work flow software for routing and managing information. Although FileNet is still a major participant in the imaging market, it competes with such notable market leaders as Eastman Kodak Co., IBM, LaserData and Wang Laboratories Inc.

Imaging isn't limited to any specific industry, but it is being readily adopted in a number of key areas. According to IDC/Avante Technology, the banking industry accounts for the greatest number of imaging systems in use. (See the chart, "Who Uses Image Processing?") Banks use imaging for processing loan applications and charge slips, as well as for customer service. Government agencies, which claim the second largest share, use imaging to facilitate information access and reduce turnaround time. Insurance applications are aimed primarily at customer service, where prompt, accurate responses translate into increased revenues. Manufacturing companies say imaging reduces the time in taking a product from design to manufacture.

Imaging is available on the full gamut of hardware platforms. Moreover, imaging products address a broad range of user configurations from single users, to work groups large and small, to enterprisewide operations. Prices are as diverse as the configurations themselves, ranging from about $25,000 for a stand-alone PC-based system to nearly $2 million for the largest enterprisewide systems.

The Latest Trends

The trend in imaging is toward integration with existing applications, and an increasing number of vendors are focusing on this issue to make their products attractive to the growing base of knowledgeable users. The move toward integration with existing systems goes hand-in-hand with the larger trend toward open systems. First-generation turnkey imaging systems were closed, stand-alone systems that required users to install proprietary workstations and servers. Although the level of support for open systems varies in today's market, most vendors now boast the ability to integrate a broad range of nonproprietary hardware components with their imaging systems. Most of the current imaging products include a high degree of work flow automation features to streamline the entire business procedure. High-end applications in paper-driven industries will continue to add users, although the PC segment of the market is likely to remain ripe for new users and vendors alike.

The accompanying resource list, which describes the market leaders of turnkey imaging systems, was gathered in a survey by Faulkner Information Services. The list represents more than 80% of the current market. ▭

Faulkner Information Services is a Pennsauken, N.J.-based independent publisher and research company specializing in information about computer and communications technologies. For more information on Faulkner's subscription services, contact the sales department at (800)-843-0460 or circle 521 on the Reader Card.

A Selected List Of Turnkey Imaging Systems

Advanced Graphic Applications Inc.
New York City
DISCUS Systems
Platform: PC
$39,500 for entry-level configuration
Circle No. 501

Bell & Howell Co.
Chicago
Image Search Plus
Platform: PC
$44,000 for a single user
Circle No. 502

Bull HN Information Systems Inc.
Billerica, Mass.
IMAGEWorks
Platform: Midrange
$185,299 for server; $35,902 per workstation
Circle No. 503

CPT Corp.
Eden Prairie, Minn.
Image File Systems
Platform: PC
$28,995 to $41,995
Circle No. 504

Digital Equipment Corp.
Maynard, Mass.
DECimage Express
Platform: Midrange
Software license fees range from $5,000 per concurrent user to $100,000 for 20 concurrent users. Hardware costs depend on configuration.
Circle No. 505

Eastman Kodak Co.
Rochester, N.Y.
KIMS 4000
Platform: PC
$40,000 for stand-alone system; $100,000 for a networked system
Circle No. 506

FileNet Corp.
Costa Mesa, Calif.
Document-Image Processing Systems
Platform: PC and midrange
$127,150 to $474,355, depending on configuration
Circle No. 507

Genesis Imaging Technologies
Valley Forge, Pa.
Electronic Document Image Management System (EDIMS)
Platform: PC, midrange and mainframe
$85,000 to $100,000

Technical Documentation Information System (TDIS)
Platform: PC, midrange and mainframe
$100,000 for minimum configuration
Circle No. 508

Hewlett-Packard Co.
Palo Alto
Advanced Image Management System (AIMS)
Platform: PC and midrange
$40,000 for an entry-level system; $400,000 for a 20-user system
Circle No. 509

IBM
Armonk, N.Y.
ImagePlus Systems
Platform: midrange and mainframe
depends on configuration
Circle No. 510

Imnet Corp.
Pine Brook, N.J.
Imageview Image Network
Platform: PC
$39,900
Circle No. 511

LaserData
Tyngsboro, Mass.
LaserView Systems
Platform: PC
$35,000 for stand-alone system; $115,000 to $163,000 for a networked system
Circle No. 512

Metafile Information Systems Inc.
Rochester, Minn.
Metaview Systems
Platform: PC, midrange and mainframe
$40,000
Circle No. 513

Micro Dynamics Ltd.
Silver Spring, Md.
Multiuser Archival and Retrieval System (MARS)
Platform: IBM PC and Macintosh
$40,000 to $50,000
Circle No. 514

NCR Corp.
Dayton, Ohio
NCR Document Management System (DMS)
Platform: PC and midrange
$800,000 for 20 workstations to $3.5 million for 120 workstations
Circle No. 515

Panasonic Communications & Systems Co.
Secaucus, N.J.
Pana File II System
Platform: PC
$20,000
Circle No. 516

Sigma Imaging Systems Inc.
New York City
OmniDesk
Platform: PC
$30,000 to $35,000 per workstation
Circle No. 517

Tab Products Co.
Palo Alto
Laser-Optic Filing Systems
Platform: PC and midrange
$49,995 for a minimum configuration
Circle No. 518

Unisys Corp.
Blue Bell, Pa.
InfoImage Systems
Platform: PC and midrange
$750,000 to $1 million
Circle No. 519

Wang Laboratories Inc.
Lowell, Mass.
Wang Integrated Image Systems (WIIS)
Platform: PC and midrange
$175,000 to $750,000
Circle No. 520

Source: Faulkner Information Services

NEW PRODUCTS

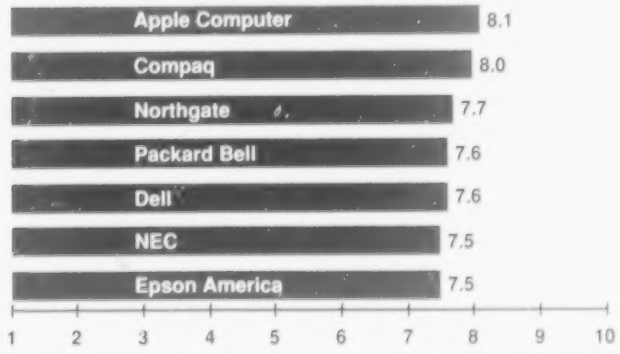
A SELECTION OF RECENT INTRODUCTIONS

DATAMATION'S PRODUCT REVIEW

Corporate Satisfaction Scorecard: Laptop Microcomputers

DATAMATION surveyed IS managers who have purchased laptop microcomputers to determine their level of satisfaction.

(1=Not Satisfied, 10=Most Satisfied)



Source: DATAMATION, June 1991

▶ SOFTWARE

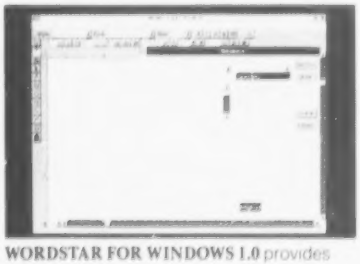
WordStar-ing Windows

WordStar International Inc. has introduced WordStar For Windows 1.0, a high-level word-processing package.

Features include page layout, graphics, table generation, indexing, tables-of-contents generation, pagination, hyphenation, footnotes and end notes, and dBase mail-merge support. It also provides a spell checker and a thesaurus, outline numbering and style sheets. Users can edit text in what-you-see-is-what-you-get (WYSIWYG) mode and magnify portions of the document from 25 to 200% to get a better look at it. A draft editor provides faster text editing. WordStar For Windows can collect various parts of a single document that might be on several different pages and show all of the text in one place.

WordStar For Windows provides both client and server support for Window's Dynamic Data Exchange (DDE), DOS file referencing and local area network support. It retails for $495. WORDSTAR INTERNATIONAL INC.

Circle 535



WORDSTAR FOR WINDOWS 1.0 provides an on-line thesaurus.

Progress In Database Access

Progress Results, a five-module query and reporting tool, lets end users access information stored in Progress, Oracle and Rdb databases and RMS files. End users can also maintain simple databases and use them with corporate databases.

Progress Results is written in the Progress fourth-generation language. Its Query, Reports, Labels and Data Export modules let end users examine and modify database tables, create reports without programming, produce custom mailings and export information to other software packages. The Administration module lets the MIS staff customize an application.

Progress works with a variety of operating systems and networking protocols, including DOS, OS/2, UNIX, VAX/VMS, DECnet, NetBIOS, Novell NetWare, SPX/IPX and TCP/IP. It is available in a developer's version and an end user/system administrator's version. Prices range from $400 to $134,000, depending on platform. PROGRESS SOFTWARE CORP., Bedford Mass.

Circle 536

The DR Is In

The newest release of DR DOS, an MS-DOS-compatible operating system, automatically loads itself, as well as buffers, device drivers, memory resident programs and network drivers into upper and high memory, freeing up to 628 kilobytes of main memory for applications.

Version 6.0 also includes a file compression system, which the vendor says can increase disk space by up to 100%, a disk cache based on MultiSoft Corp.'s Super PC Kwik and a defragmentation facility. DR DOS can also recover erased files. It maintains the erased data and avoids writing over it. A task switcher allows users to load up to 20 applications at once, then switch between them and cut and paste text and data from one application to another.

DR DOS 6.0 is available for $99. DIGITAL RESEARCH INC., Monterey, Calif.

Circle 537

▶ PCs & WORKSTATIONS

Upgrading Is A Snap

The Compaq DeskPRO/M product family of modular personal computers can be easily upgraded with processor boards that snap into the chassis, says their maker, Compaq Computer Corp.

The DeskPRO/M family consists of four models, the 386/25M, 486s/16M,

MARKET INSIGHTS

A SURVEY OF TECHNOLOGY TRENDS

Security Gets Top Priority

BY WARREN CHILDS
Business Research Group

Although information technology managers have been dealing with security issues for decades, the recent growth of decentralized and distributed-processing applications has pushed security to the top of the pile of IS managers' problems.

In the most recent survey of DATAMATION's Technology Panel, all of our panel members said they believe security issues to be important. A strong 69% said security is extremely important; the remainder said somewhat important.

Despite this consensus that security is important, only 45% say they are very satisfied with their own current security levels. An equal number say they are somewhat satisfied with their present security levels, whereas 10% say they are dissatisfied with current security precautions.

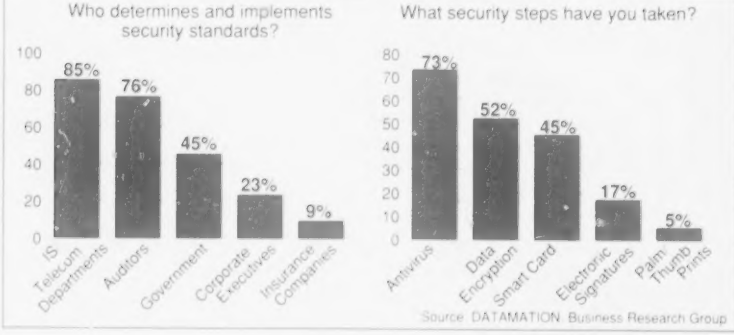
Of all the steps panel members are taking to manage security, virus protection is by far the most common: 73% of panelists say they have implemented an antivirus procedure.

Other important steps panel members say they have taken include the encryption of data, to prevent unauthorized access to transmitted data (52%); the use of smart cards to restrict access to equipment (45%); implementation of electronic signatures, which are more difficult to duplicate than ordinary passwords (17%); and the use of palm and thumb prints to control equipment access (5%).

A strong majority of panel members—85%—say IS and telecom departments take the lead role in determining and implementing security measures in their companies. But many also say that their corporate auditors, as well as government agencies, other corporate execs and even insurance companies, are becoming involved in setting standards. ▭

For more information, call Nancy Finn at (617)-964-6204, send her a fax at (617)-558-4402 or write to her at the Business Research Group, 275 Washington Street, Newton, MA 02158.

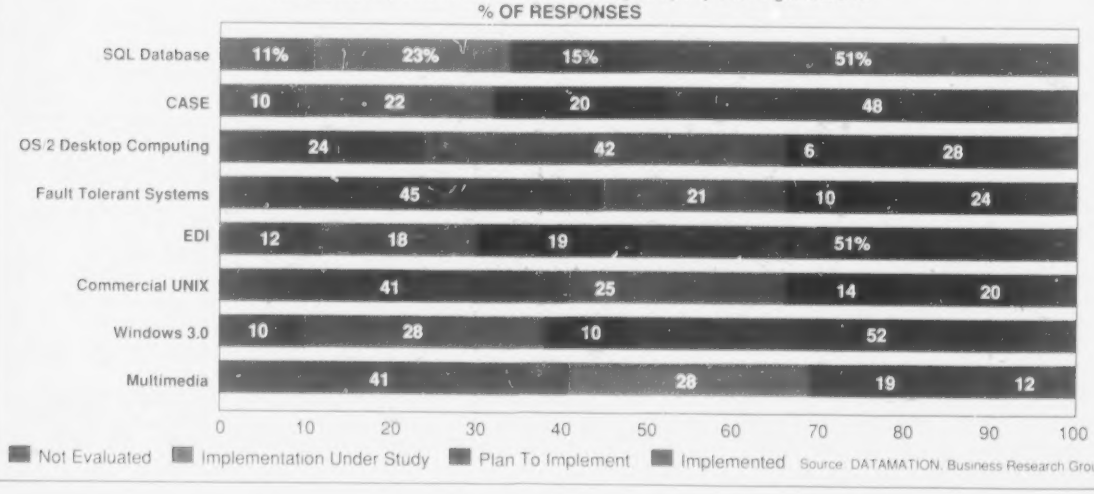
The Data Center Lockup



Source: DATAMATION, Business Research Group

DATAMATION's Technology Implementation Index: Systems And Software

DATAMATION each month surveys a select group of its readers—the DATAMATION Technology Panel—to investigate the implementation of new technologies by key user organizations.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SQL Database 11% 23% 15% 51%
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Fault Tolerant Systems 45 21 10 24
EDI 12 18 19 51%
Commercial UNIX 41 25 14 20
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Source: DATAMATION, Business Research Group

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Digiboard	36	15
Digital Equipment Corp	6-7	—
Fed Unix	102	43
First Class Systems Corp	13	6
Genicom	15	8
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